REMARKS

Claims 56-63, 65-77, and 79-88 are currently pending in the present application, including independent claims 56, 76, and 84. Independent claim 56, for instance, is directed to a breathable film comprising a blend of a thermoplastic polymer, a filler, and silica nanoparticles. The silica nanoparticles have a diameter of less than about 500 nanometers and a negative first Zeta Potential from about -1 to about -50 millivolts. The silica nanoparticles are modified with a metal ion to form modified silica nanoparticles. The modified silica nanoparticles comprise a second Zeta Potential being at least about 5.0 millivolts higher than the negative first Zeta Potential.

Claim Rejections – 35 U.S.C. § 103

In the Office Action, claims 56-63, 65-73, and 84-88, including independent claims 56 and 85 were rejected under *35 U.S.C. § 103(a)* as being unpatentable over U.S. Patent App. 2002/0004350 to Morman in view of U.S. Patent App. 2002/0151634 to Rohrbaugh. Rohrbaugh is directed to coating compositions comprising nanoparticle systems. The coating composition is to be used on soft surfaces such as fabrics, garments, textiles, and films. ¶ [0025]. The coating includes nanoparticles dispersed in a carrier. The nanoparticles are preferably layered clay materials, but can be inorganic metal oxides. ¶ [0046]. Rohrbaugh discloses that the inorganic metal oxides "may be silica- or alumina-based nanoparticles that are naturally occurring or synthetic." ¶ [0061]. Furthermore, the nanoparticles may be "functionalized." Inorganic salts of Cu^{+2} are among the functionalized surface molecules reported as possibilities. ¶ [0069].

Thus, Rohrbaugh is cited as allegedly disclosing Applicants' claimed nanoparticles and modified nanoparticles. Additionally, the Office Action asserts that it

would be obvious to combine Morman with Rohrbaugh to yield Applicants' claimed invention. Applicants respectfully disagree.

Independent claim 56 requires silica nanoparticles with a negative first Zeta Potential from about -1 to about -50 millivolts and, upon modification with a copper ion, a second Zeta Potential at least 5.0 millivolts higher than the first Zeta Potential. Rohrbaugh fails to teach or suggest such a limitation. In an attempt to obviate this limitation, the Examiner continues to point to the disclosure of Rohrbaugh that **silicate** inorganic nanoparticles may be suitable for use. Further, as support that Applicants' claimed **silica** nanoparticles has a negative first Zeta Potential of from about -1 to about -50, the Examiner again points to paragraph [0049] of Rohrbaugh that states that "a sheet of an expandable layer **silicate** has a negative electric charge, and the electric charge is neutralized by the existence of alkali metal cations and/or alkaline earth metal cations." Again, Applicants reiterate their previous arguments that "silicate" may not be equated with silica (SiO_2). In contrast, one skilled in the art appreciates that silicates are typically charged compounds (e.g., the most widely utilized silicate is SiO_4^{-2}). This is consistent with Rohrbaugh's disclosure that the sheet of silicate has a negative charge. Furthermore, again Applicants note that electrical charge may not be equated with Zeta Potential for the reasons noted previously.

However, as noted above, in a separate section, Rohrbaugh discloses "inorganic metal oxides used in the composition may be silica- or alumina-based nanoparticles that are naturally occurring or synthetic." ¶ [0061]. This disclosure of inorganic metal oxides involves completely different elements than the disclosure of natural clays (such as silicates) cited as obviating negative Zeta Potentials. Indeed, Rohrbaugh fails to include

any disclosure that "silica-based" nanoparticles may have a negative Zeta Potential, let alone any teaching or suggestion to one skilled in the art to select silica nanoparticles that have a first negative Zeta Potential from about -1 to about -50. As one skilled in the art appreciates, not all "silica-based" nanoparticles necessarily have a negative Zeta Potential from about -1 to about -50. Furthermore, as Rohrbaugh includes no disclosure of any Zeta Potential or its importance, one skilled in the art would certainly not find it obvious to optimize the "silica-based" nanoparticles disclosed in Rohrbaugh to a negative first Zeta Potential of from about -1 to about -50 absent the teaching of Applicants' disclosure. Respectfully, using Applicant's disclosure as a blueprint to reconstruct the claimed invention out of isolated teachings in the prior art is improper under 35 U.S.C. § 103.

Furthermore, Applicants additionally claim modified nanoparticles comprising a second Zeta Potential being at least about 5.0 millivolts higher than the first Zeta Potential. As disclosed in the present specification, "the Zeta Potential change of the nanoparticle is related to the quantity of metal ions adsorbed onto the nanoparticle." Pg. 12, lines 17-18. Rohrbaugh includes no teaching or suggestion to one skilled in the art to control the amount of metal ions adsorbed onto the nanoparticle, let alone require enough metal ion association to affect a Zeta Potential at least about 5.0 millivolts higher than the first Zeta Potential. Again, one skilled in the art would have no teaching or suggestion to obtain modified nanoparticles with a second Zeta Potential at least about 5.0 millivolts higher than the first Zeta Potential absent Applicants' disclosure.

As such, Rohrbaugh fails to teach or suggest silca nanoparticles comprising a first Zeta Potential from about -1 to about -50 millivolts and, upon modification with a

copper ion, a second Zeta Potential at least 5.0 millivolts higher than the first Zeta Potential. Indeed, the Examiner's holding that simply "it would be obvious" to one skilled in the art to utilize nanoparticles and modified nanoparticles with Applicants claimed first and second Zeta Potentials is merely a conclusory statement. Applicants note that rejections based on obviousness may not be sustained by mere conclusory statements, but must be based on articulated reasoning with some rational underpinning.

Furthermore, independent claims 56, 76, and 84 require that the film comprises filler blended with the nanoparticles. For instance, Applicants disclose one embodiment wherein the filler, nanoparticles, and metal are combined in an aqueous solution. The solution is then dried to create a cake to be coextruded with the thermoplastic polymer (claim 88). In attempting to obviate this limitation, the Office Action states that:

> one of ordinary skill in the art would find it obvious to blend the nanoparticles of Rohrbaugh in the mixture of thermoplastic polymer and filler of Morman because Rohrbaugh teaches that "the materials that have been subjected to a high energy surface treatment and have a plurality of nanoparticles deposited thereon can be suitable for a great many uses including, but not limited to use to transport liquid in articles such as clothing containing hydrophobic or borderline hydrophilic fibers and in portions of disposable absorbent articles."

Applicants respectfully disagree. Rohrbaugh is cited as allegedly disclosing motivation to utilize the nanoparticle system with the product of Morman. However, in stark contrast, Rohrbaugh discloses a coating for surface coating soft surfaces such as fabrics, garments, textiles, and films. For instance, Fig. 1 of Rohrbaugh is reproduced below:

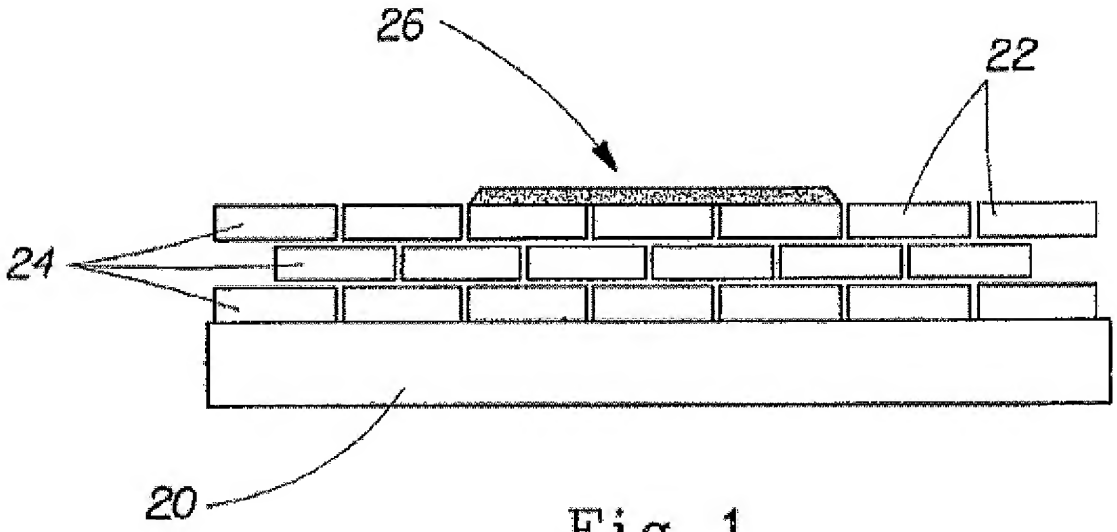


Fig. 1

As illustrated, the soft surface 20 includes layers 24 of nanoparticles 22 on the **surface**. Indeed, Rohrbaugh teaches "the present invention relates to **coating compositions** . . . comprising a nanoparticle system . . . to impart **surface modifying benefits** for all types of soft surfaces." ¶ [0002]. Rohrbaugh includes **no** teaching or suggestion to blend the nanoparticle system with the surface 20 (which may be a film (¶ [0025]). Indeed, one skilled in the art appreciates that such blending would destroy the purpose of the surface coating or, at the very least, significantly inhibit the benefits obtained from utilizing the "Coating Compositions for Modifying Surfaces" (title) of Rohrbaugh. One skilled in the art would simply have no reasoning to **blend** the nanoparticle system of Rohrbaugh with the film of Morman without utilizing Applicant's disclosure as a blueprint to reconstruct the claimed invention out of isolated teachings in the prior art.

Additionally independent claim 76 was rejected *35 U.S.C. § 103(a)* as being unpatentable over Morman in view of Rohrbaugh and further in view of U.S. Patent App.

2001/0051189 to Fernandez. Fernandez is cited as allegedly disclosing nanoparticles comprising a positive Zeta Potential as claimed by Applicants in independent claim 76. First, Applicants restate their arguments with respect to independent claims 56 and 84 above. Fernandez does not remedy these deficiencies. Second, Applicants respectfully submit that Fernandez fails to disclose nanoparticles comprising a positive Zeta Potential from about 1 to about 70 millivolts. Again, Fernandez discloses nanoparticles with a positive electrical charge which (as acknowledged by the Examiner in the present Office Action) may not be equated with Zeta Potential. Third, Rohrbaugh contains no teaching of any means of obtaining modified nanoparticles with a **lower** Zeta Potential upon modification. Indeed, Rohrbaugh only discloses positive "charged functionalities." One skilled in the art appreciates that none of the positive ions disclosed in the Rohrbaugh could yield such a limitation.

Thus, Applicants submit that independent claims 56, 76, and 84 define over the references either alone or any in proper combination. Furthermore, Applicants respectfully submit that, at least for the reasons indicated above, the dependent claims 57-63, 65-75, 77-83, and 85-88 also patentably define over the reference(s) cited. The patentability of the dependent claims, however, certainly does not hinge on the patentability of the independent claims. For instance, claim 88 requires that the breathable film is formed by coextruding said thermoplastic polymer with said blend of filler and silica nanoparticles. None of the references disclose or suggest such a limitation.

Double Patenting

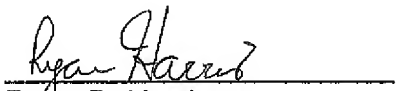
As a final matter, the provisional rejection of various claims over co-pending Application No. 10/686,933 for obviousness-type double patenting is noted. Additionally, the rejection of various claims over U.S. Patent No. 7,141,518 for nonstatutory obviousness-type double patenting is noted. Applicants agree to submit terminal disclaimers for the above references, if necessary, at a time when the present application is otherwise in condition for allowance.

In summary, Applicants respectfully submit that the present application is in complete condition for allowance and favorable action, therefore, is respectfully requested. Examiner Sasan is invited and encouraged to telephone the undersigned, however, should any issues remain after consideration of this Request.

Please charge any additional fees required by this Request to Deposit Account No. 04-1403.

Respectfully requested,

DORITY & MANNING, P.A.



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